MMAC-PLUS 6

A 6-Slot Modular Switch

FEATURES

- 10-year technology life cycle
- Supports any combination of Ethernet, Fast Ethernet, Gigabit Ethernet, Token Ring, FDDI, ATM or SNA/Mainframe Channel Attachment
- Distributed management architecture eliminates single points of failure
- Embedded WebView management
- Hot-swappable, redundant power architecture
- FNB backplanes provide up to 400 Mbps throughput
- INB packet- and cell-switching backplanes provide up to 5 Gbps throughput
- Future support for the Cell Transfer Matrix (CTM)
- Supports Cabletron's SmartSwitching, an architecture which provides high-performance, Layer 3 switching with SecureFast Virtual Networking

CABLETRON SYSTEMS
The Complete Networking Solution™

OVERVIEW

A complementary product to the highly successful MMAC-Plus 14-slot switching chassis, the MMAC-Plus 6 migrates data center technology to the wiring closet. Designed and competitively priced specifically for wiring closet deployment, the MMAC-Plus 6 is the industry's first wiring closet solution to incorporate high-end, data center functionality such as distributed virtual routing, high-performance switching and extensive management embedded in a single modular chassis.

Although smaller than the MMAC-Plus (6 slots vs. the MMAC-Plus' 14 slots), the MMAC-Plus 6 expands and protects wiring closet leadership without sacrificing functionality. The MMAC-Plus 6 enables aggressive deployment of dedicated bandwidth to the desktop, with support for over 200 shared or switched Ethernet ports. With a projected 10-year product life cycle, lower operational costs and simplified administration through Automated Enterprise Management, the MMAC-Plus 6 is the ideal solution for medium- to high-density wiring closets.

Fully Fault-Tolerant Design

With companies being more reliant on their networks to keep the business running at peak efficiency, the MMAC-Plus 6 has been designed for zero downtime. If any subsystem should fail, other major components of the MMAC-Plus 6 provide system support to keep the network up and operating until corrective measures can be taken. The fault-tolerant capabilities of the power system, management buses and other components ensure customers of a hub that safeguards itself against any interruptions to the efficient operation of the network.

Less is More

Compared to the MMAC-Plus, here's what you get with the MMAC-Plus 6:

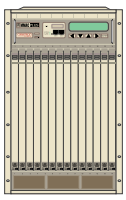
- Chassis: 40% smaller and 50% less expensive (same width, 3 rack units shorter and 8 inches shallower than MMAC-Plus)
- Connectivity Slots: 6
- Power Supplies: 2

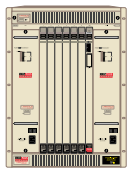
In addition to the high number of Ethernet connections, the MMAC-Plus 6 supports the entire suite of MMAC-Plus modules, including Fast Ethernet, Gigabit Ethernet, Token Ring, shared and switched FDDI, ATM, SNA and WAN technologies.

Backplane Design

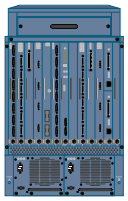
The MMAC-Plus 6 backplane design features four key components: the Flexible Network Bus (FNB), the Internal Network Bus (INB), the System Management Bus (SMB) and the Cell Transfer Matrix (CTM), which will be available in 1997. Together, they form an integrated, packet- and cell-switched backplane.

A Head-to-Head Comparison


MMAC-Plus


MMAC-Plus 6

Catalyst 5000


7500 Series

Bandwidth	10 Gbps	5 Gbps	1.2 Gbps	2 Gbps
Throughput	10 million pps	5 million pps	1 million pps	250,000 pps
ATM	168	48	3	11
Ethernet	504	216	96	176
Fast Ethernet	168	72	50	22
Gigabit Ethernet	Multiple	Multiple	None	None
FDDI	42	18	4	11
Token Ring	336	144	None	88
SNA	Mainframe Channel Attach	Mainframe Channel Attach	None	Mainframe Channel Attach
WAN	112	48	Delayed	88
Embedded Routing	IOS® Routing Cabletron Routing Routing SFVN	IOS® Routing Cabletron Routing Routing SFVN	Delayed	Limited
Broadcast Traffic Control	Thresholding Scoping Interception	Thresholding Scoping Interception	Scoping	Scoping

Flexible Network Bus (FNB)

The Flexible Network Bus on the MMAC-Plus 6's backplane consists of two dual FDDI networks, the FNB-1 and FNB-2, which provide up to 400 Mbps of data bandwidth. Through the FNB, you have access to the same bandwidth that would be used to support an entire building or campus backbone – all from a single wiring closet. Depending on the attachment policy, MMAC-Plus 6 modules can either attach to one or both of the FNB channels, or bypass the bus entirely. These FDDI networks are 100% ANSI FDDI-compliant, allowing the FNB to traverse multiple MMAC-Plus 6 chassis, or inexpensively connect to any ANSI FDDI-compliant device.

Internal Network Bus (INB)

Designed to simultaneously support both packet and ATM cell transport, the INB is the key to providing migration to ATM network environments, while preserving customer investments in existing LAN equipment. The INB is divided into two channels; the INB-1 and INB-2, each featuring a 64-bit wide data path and yielding a sustained data rate of 2.5 Gbps for a total non-blocking bandwidth of 5 Gbps. This bandwidth is in addition to the 800 Mbps available on each SmartSwitch module.

An important feature of the INB is its Time Division Multiplexing (TDM), which provides non-blocking architecture at loads up to 5 Gbps. This TDM design allows the INB to dynamically allocate bandwidth to the modules attached to the bus. An 8-bit signaling channel allows the active bus master to pre-emptively determine whether the next module actually requires the bus. If not, the bandwidth is automatically made available to another module that requires the bus. Dynamic bandwidth allocation allows the system to be over-subscribed to provide much higher actual throughput than 5 Gbps.

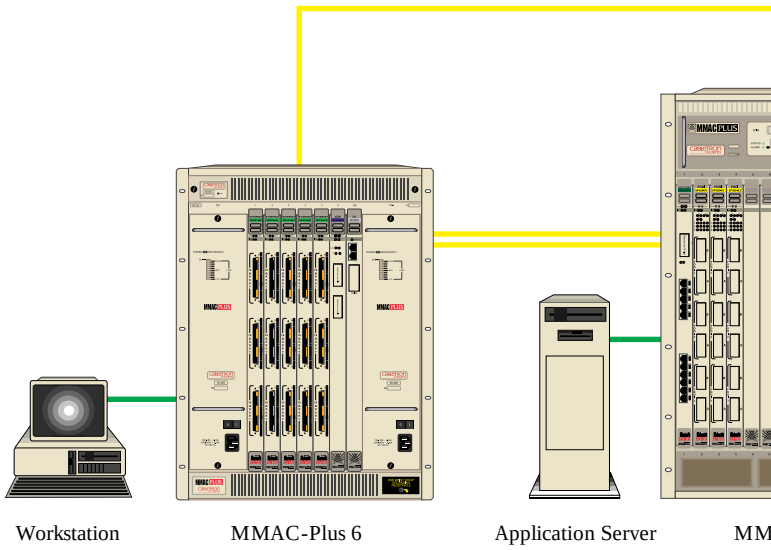
Cell Transfer Matrix (CTM)

This component will provide an essential step to the standards-based ATM networks of tomorrow. When implemented in 1997, the CTM will complement the ATM capabilities of the FNB and INB, and allow the MMAC-Plus 6 to act as an enterprise-class backbone ATM switch, with switching capacity in excess of 75 Gbps. The CTM will use a multi-stage switching system, with point-to-point links across the backplane. Every MMAC-Plus 6 chassis will be able to support the CTM, with a high capacity of OC-3/OC-12 connections.

System Management Bus (SMB)

This management bus incorporates two channels; the SMB-1 and SMB-10. The SMB-1 provides a 1 Mbps channel that is used by all MMAC-Plus 6 components to exchange status and power/environmental information, as well as diagnostic messaging.

The SMB-10 provides a 10 Mbps channel for intermodule communication and chassis management synchronization. The primary function of the SMB-10 is to allow distributed management applications within the chassis to communicate out-of-band with user data. In the event that a fault is detected on either the SMB-1 or SMB-10, they may be used as redundant channels for each other.



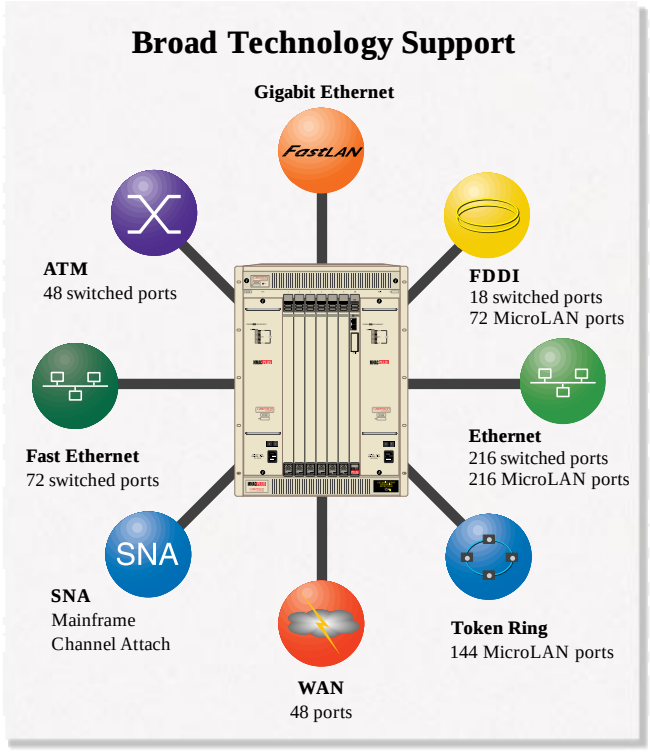
Simple and Secure Management

In the MMAC-Plus 6 chassis, there is no need for a separate management module because each of the installed modules cooperates to perform the chassis management functions. With this distributed chassis management, the modules communicate over the SMB and work together to form one "logical" chassis manager.

If a module fails or is removed, the chassis management capabilities will again be distributed across the remaining modules. This occurs immediately, with no interruption of service to users on the network and no delays to the network management system. The MMAC-Plus 6 is fully manageable under Cabletron's SPECTRUM for Open Systems product line, including SPECTRUM Enterprise Manager, SPECTRUM Element Manager, SPECTRUM Portable Management Applications and other standard SNMP management products.

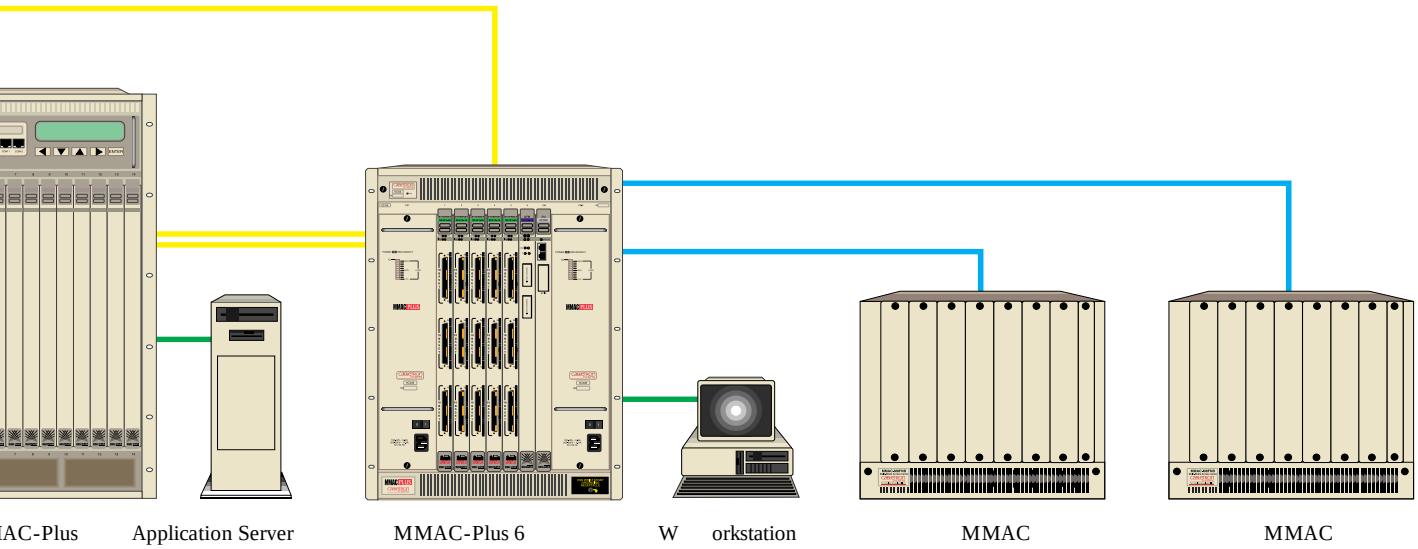
The MMAC-Plus 6's chassis management features include:

- Distributed management architecture
- No network management modules required
- RISC management processors and switching ASICs on every module



- Extensive fault tolerance
- Embedded WWW server for "out-of-box" network management
- WebView offers GUI-based configuration tools

The MMAC-Plus 6 features a System Monitor (SM) for SMB access, and a separate fan module for cooling. This provides the customer with the option to purchase the hub without the System Monitor.



Virtualizing the Network with SecureFast

The MMAC-Plus 6 and SmartSwitches support Cabletron's SecureFast Virtual Networking. SecureFast is completely compatible with routed and subnetted networks, allowing customers to significantly improve the performance of existing router architectures while migrating to a virtualized network at their own pace.

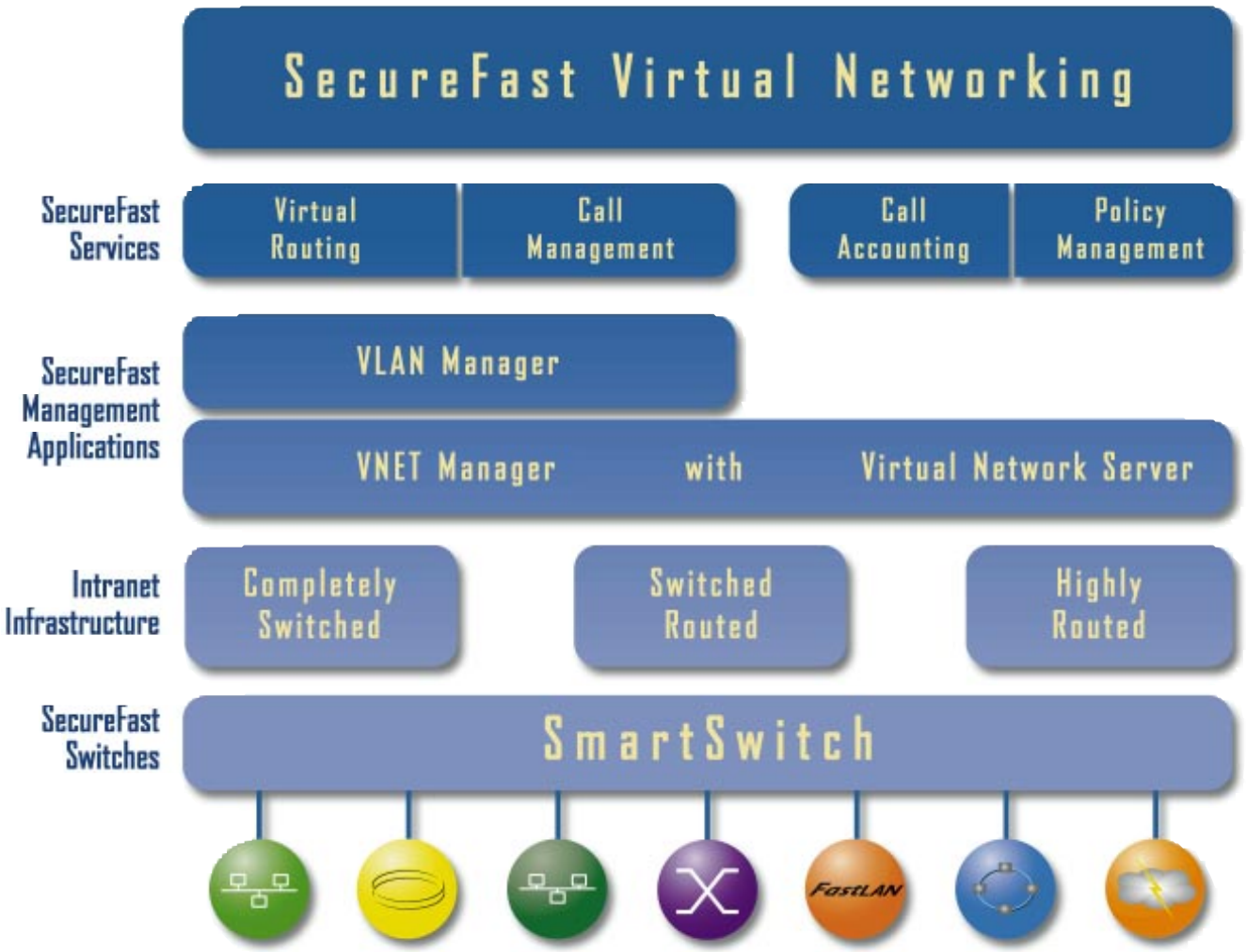
Virtualized networks offer scalable, distributed virtual routing that enables customers to avoid costly upgrades to existing backbone routers. With over two million SecureFast-ready ports installed, Cabletron provides a solution that works today and into the future, regardless of how large or fast a network grows.

WebView

The MMAC-Plus 6 offers the industry's first WWW-based management tool. Network managers can configure and monitor SmartSwitches via standard Web browser software, including Netscape Navigator and Microsoft Internet Explorer.

Network managers can access a wide range of functions from a point-and-click GUI. They no longer have to use difficult, text-based Telnet interfaces, or make trips to the wiring closet to reconfigure a switch.

WebView provides graphical displays of SmartSwitch configurations, including MAC address, interface link states, full/half duplex mode, SNMP configuration and per-port RMON statistics. Network managers can set IP addresses, activate broadcast thresholding and check environmental status information.



Corporate
35 Industrial Way
Rochester, NH 03867
U.S.A.
(603) 332-9400

Europe/Middle East/Africa
Network House
Newbury Business Park
London Road, Newbury
Berkshire, England RG14 2PZ
44-1635-580000

Asia-Pacific
3901-3902
China Resources Building
26 Harbour Road
Wanchai
Hong Kong
852-2539-6882

Unit 8
Allambie Grove Business Estate
25 Frenchs Forest Road
Frenchs Forest NSW 2086
Australia
61-2-9950-5900

Latin America
Tlacoquemécatl 21
Despacho 601
Colonia del Valle
Mexico City 03100
525-629-9904

Av. Jurubatuba, 73-3º andar
CEP 04583-100
São Paulo, SP
55-11-5506-2888

Internet
http://www.cabletron.com/

MMAC-Plus, MMAC-Plus 6, SPECTRUM for Open Systems, SPECTRUM Enterprise Manager, SPECTRUM Element Manager, SPECTRUM Portable Management Applications, SecureFast Virtual Networking, SmartSwitch, Cell Transfer Matrix, WebView and LANVIEW are trademarks or registered trademarks of Cabletron Systems, Inc. All other products or services mentioned are identified by the trademarks or service marks of their respective companies or organizations.

NOTE: Cabletron Systems, Inc. reserves the right to change specifications without notice. Please contact your representative to confirm current specifications.

Lit. #9010790 Rev-01 EAC

CABLETRON SYSTEMS
The Complete Networking Solution™

System Monitor

The MMAC-Plus 6 has a separate module that performs out-of-band management/monitoring functions within the chassis. The System Monitor provides two COM ports for local (out-of-band) management, and one EPIM port for remote (side band) management.

The COM ports are both RJ-45 and can be configured to run SLIP, PPP, APC UPS, or Local management via a terminal or modem connection. The EPIM provides a direct 10 Mbps connection to the SMB 10. This connection can be used for out-of-band graphical SNMP, or a WebView session into local management.

System Power

The MMAC-Plus 6 utilizes a distributed DC power system similar to those used in super computers and telephone equipment. This system relies on a 48-volt DC power bus running across the backplane to power all modules and subsystems. There is also separate 5-volt power delivered to each system component, used solely to power the diagnostic controllers present on every module.

The MMAC-Plus 6 supports one of two front-loading power supplies (9C206-01). They are 1000-watt, triple output supplies, with load sharing capabilities.

Specifications

Physical

- Dimensions: 26.25"H x 17"W x 16.5"D
- Weight: 35 lbs.

Environmental

- Operating Temperature: +5º to 40º C (41º to 104º F)
- Non-operating Temperature: -30º to +90º C (-22º to 164º F)
- Operating Humidity: 5 to 95% (non-condensing)
- Safety: UL1950, CSA C22.2 No. 950, IEC 950 and EN60950

Power Consumption

- Voltage Range: 100 to 125 Vac or 200 to 250 Vac
- Frequency Range: 50 to 60 Hz

Ordering Information

Part #	Description
9C106	MMAC-Plus 6 Chassis
9C206-01	MMAC-Plus 6 Power Supply (AC)
9C306	MMAC-Plus 6 System Monitor Module